## REMARKS

Applicant notes the indicated allowability of Claims 15, 16, 18, 25, 37-38 and 48-51.

The Examiner objects to claims 48-51 as being dependent from a rejected base claim. The applicant notes that Claim 48 is an independent claim and that Claims 49-51 depend therefrom. Thus, applicant requests proper notification of allowance of Claims 48-51.

Independent Claims 13, 29, 30, 35, and 52 stand rejected as obvious over Weiss (U.S. Patent No. 4,749,902) in view of Sekhar et al. (U.S. 6,455,107).

Not all claim limitations taught or suggested

All claim limitations must be taught or suggested in order to establish a *prima facie* case of obviousness. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). The Examiner's rejection is based on the premise that the sintering taught in Sekhar et al. is the same as the fusion of the present invention.

The following definitions obviate the premise.

(McGraw-Hill Encyclopedia of Science & Technology Online, http://www.accessscience.com):

> fusion
> [PHYSICAL CHEMISTRY] A change of the state of a substance from the solid phase to the liquid phase. Also known as melting.
> Pronunciation: fyzhn
>
> heat of fusion
> [THERMODYNAMICS] The increase in enthalpy accompanying the conversion of 1 mole, or a unit mass, of a solid to a liquid at its melting point at constant pressure and temperature. Also known as latent heat of fusion.
> Pronunciation: ht v fyzhn
>
> sintering
> [METALLURGY] Forming a coherent bonded mass by heating metal powders without melting; used mostly in powder metallurgy.

Further, the ISO definition (www.azom.com):

> Sintering
> "the thermal treatment of a powder or compact at a temperature below the melting point of the main constituent, for the purpose of increasing its strength by bonding together of the particles."

None of the references relied upon by the Examiner confuse these processes or contradict their meanings as set out above. However, the Examiner utilizes the generic meaning of fuse,

i.e. "to merge together", to reconcile the mutually exclusive chemical processes of sintering and fusion. One of ordinary skill in the art would understand that the term "fusion" as used by the applicant in the specification and claims is consistent with the definitions set forth above. It is black letter law that the applicant is his own lexicographer. The limitation of fusion has not been taught or suggested by the references alone or in combination. Thus, a case of *prima facie* obviousness has not been established. Applicant requests reconsideration and withdrawal of the rejections based thereon.

Moreover, Sekhar et al. do not even specify sintering colloidal silica. To the contrary, Sekhar et al. teach sintering of "reactant particulate" added to a colloidal carrier. Further Sekhar et al. teach that the colloidal carrier is not required, i.e., "Excellent results have been obtained using some slurries with a colloidal carrier and others with an organic solvent" (Col 3, ln 66-67). As such, Sekhar et al. merely disclose sintering particulate *optionally* in the presence of a colloidal carrier and do not disclose sintering of colloidal silica.

As such, neither fusion, nor fusion of colloidal silica, is taught by Sekhar et al. As the cited references fail to disclose all limitations of the claims, a *prima facie* case of obviousness has not been established. Applicant solicits reconsideration and withdrawal of the rejections.

The Examiner rejects independent Claim 29 as obvious over Sekhar et al. The Examiner states the rejection as "Sekhar et al. disclose that *after* applying a silica coating to the article, coated article is *fired* by using plasma" (emphasis added). As previously asserted, the reference is irrelevant to Claim 29, which specifies: "introducing silica powder to the plume of an argon plasma torch and passing the foil through the plume." The cited reference fails to disclose all limitations of the claim, and thus a *prima facie* case of obviousness has not been established and stands without merit. Applicant respectfully requests prompt reconsideration and withdrawal thereof.

No Motivation to Combine

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Weiss is directed to providing a solder glass layer between the molybdenum foil and quartz to improve the seal therebetween. In achieving the purpose of maintaining a tight seal, Weiss stresses that the solder glass layer must remain thin, "Applying a greater quantity progressively interferes with the tightness of the melt, since the thickness of the resulting layer increases." (Col 2, ln 34-36). In contrast however, the coating in Sekhar et al. is thick: "The coatings of the invention are "thick" coatings, of the order of tens of micrometers thick . . ." (Col 2, ln 9-11). The thicknesses contemplated are given perspective in Col 9, where "Example I" details a layer thickness of approximately 500 microns and in "Example III", a total coating thickness of 1100 microns. In comparison, paragraph 6 of the present specification presents typical *foil* thicknesses as 24 - 25 microns at centerline and about 3 microns at edge. The thick films in Sekhar et al. would preclude Weiss from forming a tight seal in the quartz – molybdenum system. Therefore, combining the references as the Examiner proposes would render Weiss unsatisfactory for its intended purpose. Thus, no motivation exists to combine the references and obviousness has not been established. *In re Gordon* 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Reconsideration and withdrawal of the rejections is solicited.

No Reasonable Expectation of Success

A reasonable expectation of success is required to establish *prima facie* obviousness. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The basis of the Examiner's proposed combination ignores disparate constituents, chemical processes, and purposes of the coating in Sekhar et al. as compared to the solder glass in Weiss.

Sekhar et al. describe an enumerated list of constituents making up a colloid slurry (see Col 4, ln 37- Col 6 ln 5) that includes: (a) A carrier, chosen from colloidal liquids, (b) A powder additive, (c) Metallic particles, (d) Micropyretic agents, (e) Metal organic compounds, (f) Pyrolizable organosilicon polymers (g) Buffer solutions (h) Binding agents. Constituents are combined in specific compositions as described throughout the Sekhar et al. disclosure. Weiss on the other hand requires, "a solder glass layer ... which has the following primary contents in percent: $SiO_2$: 60 – 70%, $Al_2O_3$: 3 – 20 %, $K_2O$: 12 – 18%" (Col 1, ln 66- Col 2, ln 3). The compositions are distinct from each other.

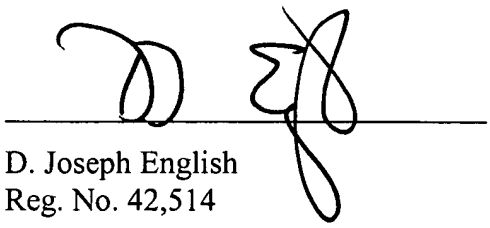
Furthermore, Sekhar et al. contemplate micropyretic reaction and non-reaction sintering to form a corrosion resistant coating, whereas Weiss contemplates pinch sealing solder glass

between foil and glass to form a vacuum tight seal. The combination proposed by the Examiner requires ignoring the myriad of constituents of Sekhar et al. (keeping the colloidal carrier), ignoring the sintering process of Sekhar et al. (substituting fusion), ignoring the composition of Weiss (substituting a thick silica film). The Examiner has not shown, and neither reference provides, any reason to believe that ignoring these elements would result in a successful combination having either the corrosion resistance of Sekhar et al. or the seal tightness of Weiss. As such, the combination may not be made and does not render the claimed invention obvious. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). Reconsideration and withdrawal of the rejections based thereon is solicited.

For at least any one of the above reasons the rejections of the independent claims 13, 29, 20, 35, and 52 are without merit. Obviousness has not been established and the references do not do not render the independent claims obvious. The claims depending therefrom are deemed patentable at least by virtue of their dependence, without regard to the further patentable limitations contained therein.

Applicant requests prompt reconsideration and withdrawal of the rejections. A further and favorable action and allowance of all claims is solicited.

Respectfully submitted,



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